I. Review of Common Binocular Vision Disorders
   A. Oculomotor Dysfunction
      1. Symptoms
         - Excessive head movement
         - Frequent loss of place
         - Omission of words while reading
         - Skipping lines while reading
         - Slow reading speed
         - Poor comprehension
         - Short attention span with close work
         - Difficulty copying from the board
         - Poor performance in sports
      2. Signs
         - Poor pursuits
         - Poor saccades 1-4+ scale
         - Decreased DEM findings
         - Decreased Visagraph or Readalyzer findings
      3. Developmental Eye Movement Test
      4. King-Devick Test
      5. Visagraph
   B. Accommodative Dysfunctions
      1. Accommodative Insufficiency
         Symptoms
         - Blur at near
         - Eyestrain
         - Headaches
         - Images coming and going in focus
         - Sleepiness during close work
         - Problems with reading
         - Avoidance of reading
Signs
- Decreased Amplitudes of Accommodation
- High Lag of Accommodation with MEM
- High Lag with Fused Cross Cyl
- Trouble with (-)2.00 with Accommodative Facility testing
- Decreased Positive Relative Accommodation (PRA)

2. **Accommodative Infacility**

   Symptoms
   - Blur after far to near, or blur after near to far
   - Distance blur with no refractive error- worse at the end of the school day
   - Headaches
   - Eyestrain
   - Fatigue after reading
   - Print appears to be moving on the page
   - Avoidance

   Signs
   - Difficulty with both (+) and (-)2.00 on Facility testing
   - Decreased NRA and PRA
   - Low base-in and base-out to blur findings at near

3. **Accommodative Excess**

   Symptoms
   - Blur at distance after long term close work
   - Eyestrain
   - Difficulty focusing from far to near
   - Headaches
   - Avoidance

   Signs
   - Lead on MEM or Fused Cross Cyl
   - Trouble with (+)2.00 on Accommodative Facility testing
   - Decreased Negative relative Accommodation (NRA)

C. **Vergence Dysfunctions**

1. **Convergence Insufficiency**

   Symptoms
   - Headaches
   - Intermittent blur
   - Intermittent diplopia
   - Symptoms worse at end of day
Burning and tearing
Inability to sustain concentrate
Words move on page
Decreased reading comprehension

Signs
Moderate to high exophoria or intermittent exotropia at near
Reduced PFV at near
Reduced vergence facility at near
Intermittent suppression at near

2. **Convergence Excess**

Symptoms
Asthenopia and headaches
Intermittent blur
Intermittent diplopia
Symptoms worse at end of day
Words move on the page
Decreased reading comprehension
Poor and slow reading

Signs
Significant esophoria at near
Reduced NFV at near
Low PRA
Fails binocular accommodative facility with minus lenses
Esophixation disparity at near

3. **Divergence Insufficiency**

Symptoms
Asthenopia with distance tasks
Intermittent blur at distance
Intermittent diplopia at distance

Signs
Esophoria greater at distance than at near
Reduced NFV at distance
Reduced vergence facility at distance
Esophixation disparity at distance

4. **Divergence Excess**

Symptoms
Parents complain of eye turning out
Patient closes an eye bright light
Signs
Greater exophoria or intermittent exotropia at distance than near
High calculated AC/A ratio
Suppression at distance
Normal near point of convergence
Normal stereopsis at near

5. Hyperphoria

II. Simple and Cost Effective Vision Therapy Techniques
A. Oculomotor Techniques
   1. Marsden Ball
   2. Rotating Pegboard
   3. Hart Chart Saccades
   4. Coded Hart Chart
   5. Michigan Tracking
B. Accommodative Techniques
   1. Near/Far Hart Chart
   2. Accommodative Rock Therapy with Flippers
      a. Monocular Flippers
      b. Binocular Flippers
      c. Recommended Goals
   3. Loose Lens Techniques
      a. Minus Lens Dips
      b. Split Pupil Technique
      c. Clear-blur-clear
      d. Just Noticeable Difference Lens Sorting
C. Vergence Techniques
   1. Brock string
      a. Smooth push-up and pull-away
      b. Bead jumps
      c. Bug on a string
      d. Multiple strings
   2. Vectograms
      a. Quoits
      b. Clown
      c. Mother Goose
      d. Spirangle
e. Skyline
f. Use of multiple vectograms
g. Use of Flippers to increase difficulty
3.Projected Vectograms
   a. Requires projector and silver screen
4. Tranaglyphs
   a. Variable
   b. Non-variable
5. Albee 3 Dot (Barrel Card)
6. Aperture Rule
   a. Single aperture
   b. Double aperture
   c. Use of Flippers to increase difficulty
7. Eccentric Circles
   a. Convergence therapy
   b. Divergence therapy
   c. Enlarged eccentric circles for distance
8. TV Trainer
   a. Increasing distance
   b. Changing the size of the filters
   c. Use of prism

D. Vertical Training
   1. Loose Prism Techniques
   2. Eccentric circles
   3. Tranaglyphs

E. Integration of Techniques
   1. Combining Oculomotor and Accommodative techniques
   2. Combining Accommodative and Vergence techniques

III. Putting Together a Vision Therapy Plan
   A. Sequencing therapy techniques
   B. Choosing the patient’s starting points
   C. Determining the patient’s goals and they have been met

IV. Use of Vision Therapy Computer Software
   A. In-office therapy
   B. Home therapy
   C. Specific Software
V. **Purchasing of Vision Therapy Tools and Supplies**
   Good-lite (good-lite.com)
   Bernell catalog (bernell.com)
   Optometric Extension Program Foundation (oepf.org). Good source for educational materials and vision therapy supplies list.

VI. **Resources for Vision Therapy Programs**
   Clinical Management of Binocular Vision by Scheiman and Wick
   Binocular Anomalies/ Diagnosis and Vision Therapy by Griffin and Grisham
   College of Visual Development (covid.org)
   Optometric Extension Program Foundation (oepf.org)